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in Gynæcology.

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THE LOCAL USE OF ANTISEPTICS IN GYNÆCOLOGY.

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ALL instruments should be made with smooth, non-absorbent handles, and so constructed as to be readily cleaned. Scissors, forceps, etc., should be made with joints readily taken apart. Sponge-holders should be made of one piece of metal sawed open, so that the slit can be cleaned perfectly. The use of soft-rubber pessaries can not be justified, for they can not be kept clean while in the vagina. Pessaries with joints should also be avoided. Some years ago, recognizing the fact that leather and plush cases could not be cleaned, I had my instrument-cases and rolls made of canvas, which can be washed, and, by having two or more, one can have ready a perfectly clean case for his instruments. These cases are now made and sold by Messrs. Reynders & Co., and W. F. Ford, with Caswell, Hazard & Co. My rule is, if my patient can not have a trained nurse and abundance of clean linen and bedclothes, to refuse to operate unless she goes to a hospital where these can be had.

Before beginning to operate, in all cases, the vulva and vagina are carefully washed with a 1-to-5,000 solution of



mercuric bichloride, all the instruments to be used are put into a 1-to-20 solution of Calvert's No. 1 carbolic acid, and the sponges are put into a 1-to-5,000 solution of mercuric bichloride. If irrigation during the operation is used, I prefer a 1-to-10,000 solution of bichloride of mercury.

All cotton to be used for tampons is made into pads or discs two inches in diameter, and from a quarter to half an inch thick; only the best absorbent cotton is used. These discs are put into a 1-to-5,000 solution of the bichloride, and then squeezed firmly to get rid of most of the fluid, leaving them firm and damp. They are then sprinkled freely with powdered iodoform, and packed away in air tight glass jars.

Styptic cotton in discs is treated with the 1-to-5,000 bichloride solution, and then put into a 1-to-4 watery solution of subsulphate of iron, and squeezed out and packed away in glass jars.

SPONGE-TENTS AND DILATATION.—Except in rare cases where I desire to dilate the cervix so as to enable me to pass one or two fingers into the cavity of the body of the uterus, I never use tents, for I have found that with Sims's steel uterine dilator I can readily dilate the canal, by taking time, at one sitting, to a sufficient extent to introduce a curette, etc.

When I do use a tent, it is made of the best mocha sponge, and is curved to suit the canal. The gum that is used in making them has some iodoform mixed with it, and the tents are kept in powdered iodoform.

Before introducing the tent I invariably dilate the canal to a slight extent with Sims's curved steel dilators, and, by means of an applicator wrapped with cotton, I apply pure carbolic acid to the surface of the canal. This not only renders it aseptic and removes the danger of sepsis from the probably diseased membranes when drainage is stopped

and pressure added by the dilating tent, but it also assures me that the tent has passed beyond and not pushed before it the constricted os internum, and enables me to put in a relatively large tent.

After the tent is put in, the vagina and vulva are again washed with a 1-to-5,000 bichloride solution, and two or more pads of prepared tampon cotton are put up against the exposed end of the tent. Then, with my long-nozzled powder blower, iodoform is blown freely into the vagina as the speculum is withdrawn, and in some cases an antiseptic pad of cotton, squeezed out in a 1-to-5,000 bichloride solution and allowed to dry, is kept over the vulva until the tent is removed. I never leave a tent in longer than twelve hours, for in that time it has done all it can do. I rarely am obliged to put in a second one, and, if I do, it must come out within twenty-four hours from the time that the first one was put in. If this plan is adopted, unless there is a center of septic infection in the uterine appendages or pelvic tissues, there will not be any rise of temperature.

Before using the steel dilator in ordinary cases, the vagina should be washed with the 1-to-5,000 bichloride solution, and before inserting the dilator the blades should be dipped in pure carbolic acid and the excess of acid shaken off. As soon as the instrument is withdrawn, an applicator, wrapped with cotton and dipped also in pure carbolic acid, should be passed into the canal; this acts both as an anæsthetic and as an antiseptic; after this, I usually blow iodoform freely over the cervix and vagina as the speculum is withdrawn.

CURETTING.—The cervix can in almost all cases be sufficiently dilated with the steel dilator to enable a medium-sized Sims's curette to be passed readily, and the risk of sponge-tents be avoided. After curetting, I apply pure carbolic acid to the curetted surface by passing the applicator

through a cervical protector, which enables me to make the application directly to the surface, and prevents most of the carbolic acid from being taken up by the walls of the cervix before it reaches the uterine cavity.

When a Sims's curette has been properly handled, after the removal of the granulations there will be little bleeding, and I make it a rule to wait even half an hour and allow the patient to come partly out from the effects of ether, and, unless the bleeding is quite free, I do not put in a tampon, for it prevents drainage, and when styptic cotton is used it adheres and hardens and can not easily be removed for several days. When all bleeding has ceased, I blow into the vagina about half a drachm of iodoform, wash off the vulva, and put on an antiseptic pad if indicated.

DIVISION OF THE CERVIX.—Here the same plan is followed. If the circular artery is cut, I stop bleeding by passing a silver suture around it, and twisting till the hæmorrhage is controlled. After putting in Sims's glass plug or a stem pessary, or, what I prefer, a hard-rubber drainage-tube, one or two pieces of prepared tampon cotton are placed against the plug, and the iodoform and a vulvar pad are used as before described.

CANCER OF THE CERVIX.—If the cancer is sloughing, as will be indicated by a fœtid discharge, the diseased tissue is soaked by frequent douches of a 1-to-5,000 bichloride solution for at least four hours before the operation, the object being to render aseptic the sloughing mass and thus prevent infection during the cutting or scraping. After removal of the cancer, I stop hæmorrhage by exposing the surface to the air, by the hot-water douche, or by ligature or temporary pressure, and avoid, if possible, a styptic tampon, for it prevents drainage, and, when forced in tight enough to be effective in stopping hæmorrhage, it may split the weakened tissues of the *cul-de-sac* and open the

peritoneal cavity. I have known death in three cases from this cause, in the hands of other surgeons.

FIBROIDS OR POLYPI.—If there is a fœtid discharge from a strangulated or sloughing part, I have the vagina or uterine cavity, as the case may be, soaked by frequent injections of a 1-to-5,000 or 1-to-10,000 bichloride solution for a least four hours, so as to prevent infection during the operation, and, for the same reasons as above stated, I avoid if possible the use of a tampon, especially a styptic tampon. In this way I have removed sloughing tumors without even a rise of temperature occurring after the operation.

VAGINISMUS, VESICO-VAGINAL AND RECTO-VAGINAL FISTULA, LACERATED CERVIX, ETC.—The vagina is washed as usual with the 1-to-5,000 bichloride solution, iodoform is used freely in the vagina and on the vulva, and suppositories of iodoform are used in place of vaginal injections, unless the discharge is sufficient to indicate washing out. Before we used antiseptics, most of these operations could be done without the formation of pus or any marked rise of temperature, but many times the septic infection was troublesome and painful, and now and then a life was lost; but, by following the practice here described, a rise of temperature above 100° F. will be extremely rare.

LACERATED PERINÆUM.—Even non-believers in the use of antiseptics will admit that operations for lacerated perinæum often caused much pain and swelling, and nearly always the formation of more or less pus, and sometimes abscesses. By adopting the following method, one can operate in many cases without having any pus or even painful swelling. Examine the case with great care, and be sure that there is no disease of the rectum, vagina, uterus, or uterine appendages that may infect the wound of the perinæum during or after the operation, then wash

the vagina, rectum, and vulva with a 1-to-3,000 or 1-to-5,000 bichloride solution, and operate under a stream of 1 to 10,000; after the sutures are in position, before twisting them up, dilate the rectum freely to relieve all tension from that source and enable the rectum to be emptied daily without effort on the part of the patient. Sprinkle iodoform freely on the vulva, in the vagina, and over the sutures. Instruct the nurse not to use a catheter if the patient can pass her water without it, and each time the water is passed or the bowels are moved (and they should be made to move, after the first day, every day) to wash out the vagina with a gentle stream of a 1-to-60 solution of carbolic acid (Calvert's No. 1), and the vulva with a 1-to-5,000 bichloride solution, and after each washing to sprinkle the parts freely with iodoform. Keep this up for at least five days, or, better, until the ninth or tenth day, when the sutures are removed. By this plan of treatment opium may not be needed at all, for the iodoform prevents not only swelling, but, in a great measure, pain also. The odor of iodoform can be pretty well disguised by Tonka bean, etc.

LAPAROTOMY.—Here more depends upon securing cleanliness in the surroundings, the clothing, the instruments, the operator's person, hands, etc., than upon the use of antiseptics, for the surface of the peritonæum can not safely be reached by efficient antiseptics, and septic poisoning in these cases means death. I am aware that even in the simplest case antiseptics should not be allowed to take the place of cleanliness. *In surgery I would place cleanliness first, drainage second, rest third, and antiseptics fourth; but perfect cleanliness is very difficult to attain, and still harder to maintain. Recognizing my fallibility, I use antiseptics to make up in a measure for it.* I wash my patient and my hands, therefore, not only with soap and warm water, but with a 1-to-3,000 bichloride solution, my instruments are

kept in a 1-to-20 solution of carbolic acid, and my sponges, after a most careful preparation, are squeezed out in a 1-to-5,000 bichloride solution before being used, and they are squeezed very dry and then put into a 1-to-60 solution of carbolic acid, or a 1-to-5,000 bichloride solution. If I cut off a Fallopian tube filled with pus, I touch the stump with either a Paquelin's cantery or some antiseptic. I have not dared to wash out the peritoneal cavity with anything except a very weak solution of carbolic acid; now I would only use warm water when washing was needed, and always dry the cavity well by sponging. After putting in the abdominal stitches, I wash the abdomen with a 1-to-5,000 bichloride solution, sprinkle iodoform freely over the sutures, and cover the wound and the abdomen with a thick layer of borated cotton, kept in place by firm adhesive straps.

The foregoing is sufficient to indicate what can be done in other gynæcological operations not mentioned in detail. If, after an operation on the vagina or the uterine cavity, septic disease sets in, as soon as the symptoms are unmistakable, say when the temperature in the axilla reaches 102° or more, I would use intra-vaginal or intra-uterine douches as indicated.

If a tent or tampon or stitches obstructed free drainage, they should be removed. The method of using intra-uterine douches would be the same as I advocated in a paper printed in the "New York Medical Journal" of June 23, 1883, on "The Local Use of Antiseptics after Abortion and Labor." Since writing that paper I have made some careful observations on the use of mercuric bichloride in intra-vaginal and intra-uterine douches.

I am satisfied that it is a serious mistake to use a solution of 1 to 2,000, as recommended by some late writers. Even a 1-to-5,000 solution, used twice a day as a vaginal

douche after labor or an abortion, will in many cases produce some of the characteristic effects of mercury on the general system within a few days. A close personal observation has made it clear to me how this may occur. After labor, and after some abortions, the capacity of the vagina is relatively large, and, where the perinæum is intact after a vaginal douche while the patient is on her back, from two to eight ounces or more may be retained in the vagina for a time. If it is retained even for a short time, most of the bichloride in solution passes by osmosis directly into the circulation of the patient. Suppose only two ounces of a 1-to-2,000 solution are retained, the patient might get a dose of at least half a grain with each douche, for, besides that in the two ounces, some would be absorbed during the time of giving the douche of a quart or more. If eight ounces are retained, two grains might be absorbed with each douche. Therefore it is important to empty the vagina by having the patient change her position, or even sit up if necessary, although a much weaker solution is used. If a solution of 1 to 2,000 is used, it will cause decided uterine contraction, so that another injection can not be given for several hours afterward without using force to insert the tube. Even the vagina may be somewhat constricted by it. In some cases of septicæmia it is necessary to use a douche every hour to kill the local infection and stop septic absorption, and in such cases I alternately use a 1-to-10,000 mercuric bichloride solution and a 1-to-60 solution of Calvert's carbolic acid No. 1. Mercuric bichloride is slow in dissolving, and when finely powdered may float undissolved for an hour or more, so it is best to have a carefully made solution, to which water can be added to make it of any desired strength. These observations as to the strength of the bichloride solution merely go to confirm what was determined in Germany some time ago.

I have said nothing about the use of antiseptics, except their local use ; but, if the germ theory of disease is correct, much may yet be done by using antiseptics internally or hypodermically to stop the development and reproduction of germs in the whole system. Ten years ago I used mercuric bichloride hypodermically in syphilitic cases, and found that I could control the disease rapidly and with great certainty. By using a solution one grain to the ounce, and injecting it into the deep muscles of the back and hip, no abscesses were ever produced, and soreness was all that was complained of. The dose can be regulated with mathematical accuracy. I would not hesitate to try the same treatment in any case of septicæmia, should I fail to check the disease by the local use of antiseptics.

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